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EXAMINER

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Please find below and/or attached an Office communication concerning this application or proceeding.

***Notice of Non-Responsive Communication***

1. The reply filed on November 1, 2002 is not fully responsive to the prior Office Action because of the following omission(s) or matter(s): Applicant's response to the Request for Information under Rule 37 C.F.R. 1.105, as set forth in paper no. 14, is not complete. See 37 CFR 1.111. The previous Examiner of record requested information describing Applicant's APEX II and GENCO II along with "other materials relevant to this line of inquiry." The previous Examiner of record also requested clarification regarding whether or not APEX II and GENCO II are computer-implemented. Applicant has provided the Office with copies of APEX II and GENCO II as originally filed years ago with the Copyright Office; however, it is still unclear whether or not there exists a computer-implemented version of either APEX II or GENCO II. Furthermore, the Examiner has come across a reference (Power, "Management Support Software: What are Your Options?," August 1990, attached as an appendix) which discusses various problem-solving and decision-making packages, including "Kepner-Tregoe Inc.'s Decision Aid II." To the Examiner's best knowledge, Applicant has made no mention of this software package. The previous Examiner's request for "other materials relevant to this line of inquiry" is deemed to incorporate a request for any software, computer-implemented programs, etc. incorporating any or all of the subject matter not only recited in the claims, but also disclosed in Applicant's specification. Furthermore, if such software or any other software related to the claimed invention exists, Applicant is requested to point out how the software (as it existed prior to Applicant's earliest priority date) differs from the claimed invention.

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Since the above-mentioned reply appears to be *bona fide*, applicant is given **ONE (1) MONTH or THIRTY (30) DAYS** from the mailing date of this notice, whichever is longer, within which to supply the omission or correction in order to avoid abandonment. EXTENSIONS OF THIS TIME PERIOD MAY BE GRANTED UNDER 37 CFR 1.136(a).

2. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Susanna M. Diaz whose telephone number is (703) 305-1337. The examiner can normally be reached on Monday-Friday, 9 am - 5 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tariq Hafiz can be reached on (703) 305-9643.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Receptionist whose telephone number is (703)308-1113.

Any response to this action should be mailed to:

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Art Unit: 3623

Hand delivered responses should be brought to Crystal Park 5, 2451 Crystal Drive, Arlington, VA, 22202, 7<sup>th</sup> floor receptionist.

*Susanna M. Diaz*

Susanna M. Diaz

Patent Examiner

Art Unit 3623

March 12, 2003

*[Signature]*  
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TECHNOLOGY CENTER 3600

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Management support \*software\*: What are your options?  
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ABSTRACT: Management support systems (MSS) integrate computer, voice and often video hardware with off-the-shelf and custom management support \*software\*, computer-readable information resources and telecommunications technology. The systems often include decision support and expert systems and can be used for a range of management applications, from such generic functions as \*problem\* \*solving\* and \*decision\* \*making\*, planning, organizing and staffing as well as more specific managerial roles. Several MSS \*software\* packages are described for MS-DOS and Macintosh environments in the following categories: management decision aids (including \*Kepner\*-\*Tregoe\* Inc's Decision Aid II and Decision Support \*Software\* Inc's Expert Choice); management planning aids (including Claris Corp's MacProject II and Micro Planner International's Micro Planner); graphics \*software\* (including Cricket \*Software\* Inc's CricketGraph and Claris's MacDraw II); electronic mail/networking \*software\* (including IBM's PROFS); and application generators (including Microsoft's Excel).

TEXT:

Management Support \*Software\*: What Are Your Options?

When personal computers (PCs) became widely available in the early 1980s, few managers thought PCs would revolutionize how managers work. However, a computerized management support revolution is now occurring. A major milestone in this revolution was the introduction of the Apple Macintosh in 1984. The Macintosh uses a graphical user interface (GUI) operating system that is much easier for managers to learn and use. At first, users of the Apple Macintosh were provided with only a simple, proprietary word processor and a basic painting program. Apple's secrecy, the Macintosh's closed architecture, and the market's uncertainty concerning the acceptance of the new machine all contributed to the sluggish development of Macintosh \*software\* and the limited use of ~~Macintosh-based management support systems. This situation, however, has now~~ changed dramatically.

In broad terms, management support systems (MSS) are built using computer, voice and, possibly, video hardware components, off-the-shelf and customized management support \*software\*, computer-readable information resources, and a telecommunications infrastructure. [1,6,10] MSS, which often include decision support and expert systems, can be used by managers to help them accomplish a wide variety of job-related objectives. [8,10] Currently, there are powerful PC \*software\* packages to aid managers at least partially with all of the generic managerial tasks: \*problem\*-\*solving\* and \*decision\* \*making\*, planning, organizing, staffing, communicating and controlling. [4] In the near future, management support ~~\*software\* will probably support the various managerial roles identified by~~ Mintzberg, [5] and the more recent descriptions of fast-paced managerial work based on developing a broad agenda and maintaining a broad network of contacts. [3,9]

The purpose of this article is to discuss innovative, state-of-the-art, off-the-shelf \*software\* intended to aid managers in effectively performing their jobs. Although many of the \*software\* packages discussed below are available for both Macintosh and MS-DOS environments, in some cases the Macintosh applications are easier to use, and more powerful as well. In general, all of the graphical user interface (GUI) packages seem to provide greater efficiency and functionality for managers.

From the beginning, the Macintosh was designed to be simple to operate; the overused phrase "user-friendly" characterizes the Macintosh. This is primarily because Macintosh applications are written based on strict guidelines, so there is almost universal consistency among products. Most of the Macintosh programs seem intuitive and logical to managers.

Despite the early reaction to the Macintosh as "just a toy," research and experience has demonstrated that it is a management tool. While some may contend that the Macintosh is "more fun to use," this attribution should not detract from its usefulness in managerial work environments. In fact, recent studies by Diagnostic Research Inc. and Peat Marwick provide some evidence that managers with Macintoshes use their computers more, require less time to accomplish identical tasks, learn programs faster, retain this knowledge longer, and encounter less computer anxiety. It seems reasonable to extrapolate that an organization-wide MSS built with Macintoshes may increase organization productivity and effectiveness. The OS/2 Presentation Manager, Microsoft Windows and Graphical Unix environments like Open Look, NeXTStep and Motif are challenging the Macintosh environment, but additional MSS applications need to be developed for these environments.

The following paragraphs discuss a number of innovative management support \*software\* packages in five major categories: management decision aids, management planning aids, graphics \*software\*, electronic mail/networking \*software\*, and application generators. I think these packages are useful to managers. No attempt has been made to cover operational-level management support \*software\* for inventory management, scheduling, plant layout, etc. That type of MSS is best covered in another article. Also, only a few of the hundreds of packages are discussed in the following paragraphs. Readers seeking detailed reviews of all spreadsheet packages or all database packages should consult recent issues of popular monthly PC magazines.

#### Management Decision Aids

The number of decision aiding packages is growing, but few innovations are noticable and some decision aiding packages are no longer on the market. The number of packages for the Macintosh remains very restricted compared to the MS-DOS environment. Decision aiding programs help users structure a decision situation and apply decision analysis tools like multi-attribute utility models. In 1986, Golden, Hevner and Power[2] prepared a comprehensive review of decision aids. The major packages rated favorably in that review included: Decision Aid II (\*Kepner\*-~~\*Tregoe\*~~ Inc.), Expert Choice (Decision Support \*Software\* Inc.), and the Consultant (ODS Inc.). Currently, a new type of decision aid called Group Decision Support (GDS) ~~is dominated by an MS-DOS product called~~ GroupSystems (Ventana Corporation) developed at the University of Arizona. The following single-user packages are good choices for managers in this \*software\* category.

Design (Meta \*Software\*) is a powerful graphics and text processing program for the analysis and design of complex systems. This MS-DOS and Macintosh program helps a user visualize any complex system that benefits from graphic representation of concepts. Examples include flow charts, organizational charts, computer programs, decision trees and information networks. Ideas can be expressed through any variety of relationships. Connections between graphic objects are remembered and redrawn automatically. Text can be contained within graphic elements. The graphic database allows users to build multipage diagrams with successive levels of detail. Design's hierarchical nature permits sophisticated layout, manipulation and analysis of simple drawings and complex system diagrams.

Stella (High Performance Systems Inc.) is a continuously oriented simulation modeling package. It is a Macintosh application for business planning and analysis. The program shows the relationships underlying a problem by helping users select, position and connect four kinds of icons on the screen. As the user builds a model graphically, the \*software\* creates an equation structure that simulates the system of relationships. Model output is produced as an animation of the diagram, time series or scatter plots, or printed numeric values. Any part of the model -- diagram,

plots, data and equations -- can be exported to other Macintosh applications. Stella makes analyzing "what if" situations easy.

Expert Choice (Decision Support \*Software\* Inc.) is a graphically oriented MS-DOS decision analysis package based on Saaty's [7] Analytical Hierarchy Process (AHP). The program allows the user to determine which factors are relevant to a decision and list the possible choices being considered. The user builds a hierarchy and each element of the hierarchy is weighed according to the user's experience and personal insight. Expert Choice then calculates and displays the analytical results, allowing managers to easily visualize and communicate their decisions and the reasons behind them. This program has been used successfully in "chauffeur-driven" group decision meetings.

#### Management Planning Aids

Project planning \*software\* is readily available in the PC environment, and many of the packages have been updated and improved. These packages have been primarily used for "large projects requiring formal plans," but managers should be able to find additional tasks where benefits can be gained from using PC-based project planning aids. Many of the current MS-DOS packages need improved graphical interfaces. The best choices for managers are the following packages.

MacProject II (Claris Corp.) is a versatile project management tool for a manager who plans, controls and presents single projects of medium size. The user enters all tasks and resources involved in a project, and the program then charts the critical path to completion, calculating dates and deadlines. If there is a change in any phase of the project, the program recalculates every phase and gives the manager new results. This feature allows managers to maintain up-to-the-minute project plans that accurately reflect the current status of a job. Other features of this program include schedule, task, resource and tabular charts, the ability to calculate and adjust fixed costs, variable costs and income, and "what-if" analysis. This program has been improved and managers can learn to use it quickly and easily.

Micro Planner (Micro Planner International) is a sophisticated productivity tools that helps a manager optimize resources and accomplish objectives on time and on budget. Time analysis tells a user when a project can be expected to start and finish, and it establishes the critical path. Multiple calendars can be created. Special activity and event types are used to model and logically sequence activities including overlapping activities. Resource leveling optimizes resource usage and schedules. A progress management feature automatically updates and schedules projects and identifies delays. Exception management reporting is provided to highlight problem areas and customize action reports. Users can exchange project information to and from Micro Planner, and can merge separate projects into larger projects. Users can also exchange files between Micro Planner on the IBM and Micro Planner on the Macintosh.

#### Graphics \*Software\*

The impact of graphics in a formal presentation is underestimated by some managers, and business graphics are sometimes under-used. Business data needs to be analyzed and then persuasively communicated. Graphs and drawings can increase the understanding and retention of a specific business data analysis. A number of graphics packages have been developed to help managers analyze data and a number of novel programs support geographic-oriented analyses and presentations. The following are broad-purpose management support graphics programs.

CricketGraph (Cricket \*Software\* Inc.) is a professional color graphics presentation package that is easy to use and has 12 graph and chart types. One of the most important features of this program is its versatility. It allows the user complete control over the final look of the graph. Data can be sorted, grouped by ranges of values, smoothed and transformed by logarithmic, trigonometric, exponential and statistical functions. The user can change any part of the graph or chart by simply clicking on any portion and editing it.

MacDraw II (Claris) is an easy-to-use structured color graphics program that allows the user to create business presentations, design

forms, reports, overheads and slides, and create display materials, newsletters and technical illustrations such as floor plans, maps and flow charts. The user is provided with a set of easy to use drawing tools including lines, boxes, circles, polygons and arcs that can be used alone or in a combination to create "objects." These objects can then be moved, reshaped, resized and combined to provide effective and original graphic artwork in a very short period of time. Although it is easy to use, MacDraw II is a precision drawing program. A similar program is called Superpaint (Silicon Beach).

A key management support tool is a presentation graphics package. The best is still PowerPoint (Microsoft Corp.). It was specifically developed to design presentation visuals, arrange and organize presentations, and develop audience handouts. This program includes word processing capabilities for multi-level bullet charts, diagram drawing tools for illustrations, and on-screen slide sorts. PowerPoint works with an entire presentation at one time, eliminating the need to maintain an unwieldy assortment of individual drawings in separate files. Special purpose drawing tools are provided for diagrams and illustrations. Company logos, borders, dates and slide numbers can be placed on a master slide to give visuals a standard look. Slides in multiple presentations may be arranged and rearranged or combined with other presentations using the title and slide sorters. Graphics and text can be imported from virtually every Macintosh program.

#### Electronic Mail/Networking \*Software\*

Managers need sophisticated electronic mail (e-mail) service to employees in their own workgroup, to other employees in their own organization and, ideally, to customers and suppliers. An e-mail application should be available at all times in a window of the manager's workstation. A number of Macintosh e-mail packages provide managers with point and click access to dialog boxes for incoming messages, memo and telephone message pads, address boxes, etc. Also, visual and auditory cues alert users to any incoming messages. Second generation e-mail packages for local area network (LAN) servers such as QuickMail have additional features including real-time conferencing, message priority settings and custom message formats. A mainframe e-mail server like PROFS from IBM is still a good choice for a corporate-wide mail system. A number of mail and communication packages exist to connect to PROFS. On an ethernet network, a 3270 terminal emulation package on a Macintosh may provide excellent functionality and aid managers who are moving from a terminal environment to a PC management support environment.

The issue of networking is extremely important for building a management support computing environment. Executive workstations need to be connected in local networks and to a variety of mini and mainframe computers. Apple Macintosh computers are shipped with a built-in network connection based on an inexpensive, simple plug-in connector box and the AppleTalk network standard. Macintosh workstations connected on a local area network can share printing and other resources. Many communications packages have been written that allow workstations access to "on-line services." In addition to Macintosh-to-Mainframe connections, much progress has been made concerning Macintosh-to-DOS connectivity. Using special translator applications, almost any DOS file can now be translated into a Macintosh file, run using Macintosh applications, and then be returned to DOS format. Increasingly, Macintosh applications are able to execute DOS files directly. Also, DOS programs can now run on a Macintosh using an emulation program called SoftPC.

#### Application Generators

Spreadsheet \*software\*, expert system shells, hypertext shells, object-oriented programming languages and database packages can all be classified as management support application generators. A spreadsheet template is commonly used by managers and analysts for planning and decision making tasks like preparing budgets and pro forma financial statements, making pricing decisions, and analyzing capital expenditures. Specific spreadsheet templates currently exist to aid in many of these tasks. Overall, this class of MSS \*software\* is becoming more complex, more



integrated and more powerful. The programming capabilities are becoming easier to use and more powerful. For example, it is not possible to develop spreadsheet templates with "user friendly" interfaces. Most of the improvements in this \*software\* category are occurring in the Macintosh environment. The Macintosh environment is still somewhat weak in terms of expert system shells. Powerful shells like KEE, ART and TIMM are MS-DOS-, mainframe- or AI workstation-based. The TI Explorer system and Nexpert Object are, however, now running on the Macintosh.[10]

Some exciting \*software\* developments for management support are still occurring in the spreadsheet category. A relatively new program for both DOS and Macintosh environments called Excel (Microsoft Corp.) is probably the most powerful spreadsheet available. Excel is more than just a spreadsheet; it is a financial analysis tool that is linked with business graphics and a database. Several spreadsheets can be viewed on the screen simultaneously, allowing rapid comparison and analysis. One of the most powerful features of Excel is its ability to easily create macros or set up templates, letting the user automate repetitive tasks. Macros can be programmed directly or with a unique record feature. Excel is much more powerful than either Jazz or MacCalc on Macintosh, but new spreadsheet programs on the Macintosh like Wingz (Informix) are challenging Excel. Excel is definitely as powerful as the popular Lotus 1-2-3 (release 2.2 or 3.0) or the new Quattro Pro spreadsheet.

Apple's HyperCard and related programs like SuperCard and Guide (Owl Technology) may be the most useful and powerful applications ever written for a personal computer. HyperCard is both a flat file and relational database program; it is able to perform simple spreadsheet functions; it is a powerful graphics program; it is a text editor; it incorporates digitized sound; and it provides built-in animation. HyperCard is a simple and powerful application generator. By using HyperTalk, a scripting/programming language, users can program and write their own applications. Also, HyperCard can be used as an application controller, allowing the user to jump from one application to another with a simple point and click of the mouse.

With all of these features, HyperCard might best be described as an all-purpose information manager. HyperCard enables users to easily customize storage and retrieval of both text and graphics, making organization of large amounts of data easy. Although HyperCard's most powerful features require scripting/programming, it has reinforced and accelerated a trend toward object-oriented programming (OOP) for managers/users. Many stacks are already available and this number is increasing. A user's information base can even be linked to a commercial information data base for almost unlimited data availability. HyperCard can act as the front-end driver for CD-ROM and write once/read many times (WORM) drives -- two technologies that hold significant promise for MSS.

HyperCard, SuperCard and Guide do have limitations -- the card concept is itself a poor representation for some management tasks and the programs have a fixed control structure. Also, more management-oriented stacks need to be commercially released. Finally, programming/scripting can be a complex and time-consuming task for a manager or a programmer.

Examples of simple and useful management support HyperCard stacks include an on-line rolodex, calendar, appointment book, "To Do" list, area code table, automatic phone dialer, filing cabinet, financial calculator, charts, tables, indexes, reference materials and so on. Of the commercial stacks available for managers, two stacks stand out as examples of HyperCard's potential usefulness. Business Class (Activision Inc.), written by Danny Goodman, was designed for the international manager/traveler who needs quick access to information such as currency exchange rates, travel services, passport requirements, local customs, weather, electrical requirements, emergency assistance, postal rates and telephone service for the major countries of the world. With the click of a button, any of this information is displayed for many countries. A similar template could be developed to access a company's policy guidelines for sick leave, vacations, expense reporting, hiring, promotions, franchising, etc.

A second stack, called Navigator II (Wild and Hudspeth), is a

prototype executive information system (EIS) stack written by Bob Wild and Paul Hudspeth. Navigator II attempts to provide a user interface for an executive workstation. Pointing and clicking from a single screen gives the user access to an appointment book, rolodex, calculator, current news reports, alarm clocks and a sophisticated telephone dialer and log book. File drawers can be opened to access information concerning employee programs, current projects, meetings, personnel services and miscellaneous reports. Confidential drawers can even be "locked" with password protection. Mouse clicks also give the user automatic logon to on-line databases as well as other applications. With a Macintosh-based EIS, almost any source of information can be accessed with simple pointing and clicking. For this reason, users spend their time reading information, not searching for it. The Navigator II stack was a forerunner to a number of commercial EISs developed for the Macintosh. Any PC-based EIS tools must exist in a distributed computing environment that links a PC to a mini or mainframe host.[10] The largest selling combined mainframe/PC-DOS package is Commander EIS (Comshare Inc.). Currently, Commander EIS is not available for the Macintosh environment.

#### Conclusions

The primary premise of this article is that better management tools and systems can increase organization productivity and effectiveness. It seems plausible that a well designed MSS can significantly increase the amount and quality of work that a manager can produce in a given period of time. Good tools, systems and appropriate training should decrease the cost for a unit of managerial labor. Also, with good tools managers can reduce their dependency on support staff, reduce repetitive management work, and have access to more than better management information. Given all of these caveats, it is important to continuously review and critique the development of management support \*software\*.

This article is a critique, a review and, in some ways, a state-of-the-art summary of management support \*software\*. The conclusions reached support the statement that Macintosh management support \*software\* has equal or greater functionality than comparable MS-DOS \*software\*. Also, and in general, one can conclude that management support \*software\* for personal computers has greater functionality than mini and mainframe stand-alone \*software\* solutions. Admitting to some bias as a Macintosh user, I also think it is reasonable to conclude that the Apple Macintosh provides the most powerful, user friendly management \*problem\* \*solving\* and \*decision\* \*making\* environment currently available.

Despite the advances in \*software\*, I am convinced that no current computing environment provides all of the needed support for management tasks.[6] New applications and a more integrated multi-tasking, multi-user, multi-machine environment are needed to develop really powerful management support environments. The new object-oriented \*software\* development environment may provide a tool for building innovative management support applications. Current HyperCard stackware indicate the potential for advanced object-oriented applications. In general, improvements in and extension to HyperCard-like products and other MSS programming environments, including support for CD-ROM and background communications with mainframes, will expand the use of management databases and management tools.

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